

THAT WHICH IS CLAIMED IS:

1. A process comprising charging a hydrocarbon feed having a concentration of at least one organic aluminum halide compound to an isomerization zone operating under isomerization conditions and containing an isomerization catalyst.
2. A process according to claim 1 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$ wherein R is an alkyl, alkenyl, or aryl radical containing 1 to 6 carbon atoms, X is a halogen, and Y is an integer selected from the group consisting of 1 and 2.
3. A process according to claim 1 wherein said concentration of said organic aluminum halide compound is in the range of from about 0.001 ppbw to about 500 ppbw.
4. A process according to claim 1 wherein said concentration of said organic aluminum halide compound is in the range of from about 0.01 ppbw to about 100 ppbw.
5. A process according to claim 1 wherein said concentration of said organic aluminum halide compound is in the range of from about 0.1 ppbw to about 50 ppbw.
6. A process according to claim 1 wherein said concentration of said organic aluminum halide compound is in the range of from 0.5 ppbw to 15 ppbw.
7. A process according to claim 1 wherein said isomerization catalyst comprises platinum, chlorine, and alumina.

8 A process according to claim 1 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$, wherein R is an alkyl radical containing 1 to 4 carbon atoms, X is a halogen selected from the group consisting of chlorine and bromine, and Y is an integer selected from the group consisting of 1 and 2.

9. A process according to claim 1 wherein said organic aluminum halide compound is ethyl aluminum dichloride.

10. An isomerization process comprising the steps of:

charging a hydrocarbon feed comprising an isomerizable hydrocarbon to an isomerization zone containing an isomerization catalyst, wherein said isomerization zone is operated under isomerization conditions; and

introducing an organic aluminum halide compound into said hydrocarbon feed in an amount that is effective to inhibit deactivation of said isomerization catalyst.

11. A process according to claim 10 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$, wherein R is an alkyl, alkenyl, or aryl radical containing 1 to 6 carbon atoms, X is a halogen, and Y an integer selected from the group consisting of 1 and 2.

12. A process according to claim 10 wherein said amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.001 ppbw to about 500 ppbw.

13. A process according to claim 10 wherein said amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a

concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.01 ppbw to about 100 ppbw.

14. A process according to claim 10 wherein said amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.1 ppbw to about 50 ppbw.

15. A process according to claim 10 wherein said amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from 0.5 ppbw to 15 ppbw.

16. A process according to claim 10 wherein said isomerization catalyst comprises platinum, chlorine, and alumina.

17. A process according to claim 10 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$, wherein R is an alkyl radical containing 1 to 4 carbon atoms, X is a halogen selected from the group consisting of chlorine and bromine and Y is an integer selected from the group consisting of 1 and 2.

18. A process according to claim 10 wherein said organic aluminum halide compound is ethyl aluminum dichloride.

19. An isomerization process comprising the steps of:

charging a hydrocarbon feed comprising an isomerizable hydrocarbon to an isomerization zone containing an isomerization catalyst, wherein said isomerization zone is operated under isomerization conditions; and

introducing a first amount of an organic aluminum halide compound and a second amount of a nonmetallic chloride compound into said hydrocarbon feed, wherein said first amount and said second amount are effective to inhibit deactivation of said isomerization catalyst.

20. A process according to claim 19 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$, wherein R is an alkyl, alkenyl, or aryl radical containing 1 to 16 carbon atoms, X is a halogen, and Y is an integer selected from the group consisting of 1 and 2.

21. A process according to claim 19 wherein said nonmetallic chloride compound is selected from the group consisting of perchloroethylene, tetrachloroethylene, hexachloroethane, carbon tetrachloride, 1-chlorobutene, 1-chloro-2-methylpropane, 2-chloro-2-methylpropane, propylene dichloride, hydrogen chloride, and mixtures of any two or more thereof.

22. A process according to claim 19 wherein said first amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.001 ppbw to about 500 ppbw, and wherein said second amount of said nonmetallic chloride compound introduced into said hydrocarbon feed is such as to provide a concentration of said nonmetallic chloride compound in said hydrocarbon feed of from about 0.01 ppmw to about 500 ppmw.

23. A process according to claim 19 wherein said first amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to

provide a concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.01 ppbw to about 100 ppbw, and wherein said second amount of said nonmetallic chloride compound introduced into said hydrocarbon feed is such as to provide a concentration of said nonmetallic chloride compound in said hydrocarbon feed of from about 0.01 ppmw to about 100 ppmw.

24. A process according to claim 19 wherein said first amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from about 0.1 ppbw to about 50 ppbw, and wherein said second amount of said nonmetallic chloride compound introduced into said hydrocarbon feed is such as to provide a concentration of said nonmetallic chloride compound in said hydrocarbon feed of from about 0.2 ppmw to about 50 ppmw.

25. A process according to claim 19 wherein said first amount of said organic aluminum halide compound introduced into said hydrocarbon feed is such as to provide a concentration of said organic aluminum halide in said hydrocarbon feed of from 0.5 ppbw to 15 ppbw, and wherein said second amount of said nonmetallic chloride compound introduced into said hydrocarbon feed is such as to provide a concentration of said nonmetallic chloride compound in said hydrocarbon feed of from 0.5 ppmw to 10 ppmw.

26. A process according to claim 19 wherein the weight ratio of said organic aluminum halide compound to said nonmetallic chloride compound in said hydrocarbon feed is from about 1:100,000 to about 1:10.

27. A process according to claim 19 wherein the weight ratio of said organic aluminum halide compound to said nonmetallic chloride compound in said hydrocarbon feed is from about 1:10,000 to about 1:50.

28. A process according to claim 19 wherein the weight ratio of said organic aluminum halide compound to said nonmetallic chloride compound in said hydrocarbon feed is from about 1:5,000 to 1:500.

29. A process according to claim 19 wherein said isomerization catalyst comprises platinum, chlorine and alumina.

30. A process according to claim 19 wherein said organic aluminum halide compound is represented by the formula $R_{3-Y}AlX_Y$, wherein R is an alkyl radical containing 1 to 4 carbon atoms, X is a halogen selected from the group consisting of chlorine and bromine, and Y is an integer selected from the group consisting of 1 and 2.

31. A process according to claim 19 wherein said organic aluminum halide compound is ethyl aluminum dichloride.

32. A process according to claim 19 wherein said nonmetallic chloride compound is perchloroethylene.